July 2002

Safety Smarts

Next Issue:

- New Training
- Employee Awareness

August Training:

- Hazcom – 8/6
- Bloodborne – 8/13

Articles

Heat Stress

Combine heat, a little humidity, physical labor and you have the ingredients for serious health problems. If conditions are right, even death can occur in the hot Arizona climate. In 1999, 34 heat related fatalities were reported to OSHA and 2,420 workers experienced heat related symptoms which caused them to miss work.

One of the simplest ways to prevent an occurrence of heat stress is avoid dehydration. Avoiding dehydration starts the day before and requires the employee to drink plenty of water. Fluids high in caffeine, alcohol or even soda act as a diuretic, which further deplete the fluids from your body.

Recent studies indicate that an employee working in a high-heat conditions with moderate physical activities can lose up to 1.5 liters of water an hour in their sweat.

NIOSH and OSHA recommend drinking five to eight onces of water every 15 to 20 minutes when working in a high heat condition. It is also recommended those employees pre-hydrate at the start of their shift by drinking 8 to 16 ounces of fluid.

Heat Stress - continued on page 2

Updated Respiratory Program

The Risk Management Division is in the process of finalizing the most recent update to the respiratory protection program. The written program is part of the requirements defined in the Respiratory Protection Standard (29 CFR 1910.134).

In an effort to standardize how the program is administered, a written policy was developed which addresses items such as the purchase of masks, medical evaluations, fit testing and training.

During recent training at the OSHA Institute, Tempe's written program was compared to other programs from across the nation. The Tempe program scored high marks when compared to these programs. Tempe is also a leader in the implementation of respiratory protection for law enforcement officers.

There are two major updates that employees in the program with notice. Training will take on a whole new look and will require students to demonstrate a practical competency with their own mask.

The most evident change in the program will be the implementation of a new respiratory survey. This survey, based on the NIOSH decision logic form, is recommended by OSHA to ensure employers correctly identify the hazards and determine the correct type of respirator required by each employee.

Respiratory - continued on page 2

Heat Stress *(Continued from page 1)*

Water intake is one of the preventative measures that employees can take to reduce the risks associated with working in a hot environment. However, employees should also have a basic knowledge of what the heat index is and how important this index is in overall heat safety.

Sweating, by itself, does nothing to cool the body, unless the water is removed by evaporation. High relative humidity retards evaporation. Heat disorders generally have to do with a reduction or collapse of the body's ability to shed heat by circulatory changes and sweating.

Heat Stress - continued on page 3

	Relative Humidity																			
	0%	5%	10%	15%	20%	25%	30%	35%	40%	45%	50%	55%	60%	65%	70%	75%	80%	85%	90%	95%	100%
Temp	**Equivalent Heat Index**																				
140 F	125																				
135 F	120	128												Excessive Heat Warning							
130 F	117	122	131																		
125 F	111	116	123	131	141									Heat Advisory							
120 F	107	111	116	123	130	139	148														
115 F	103	107	111	115	120	127	135	143	151												
110 F	99	102	105	108	112	117	123	130	137	143	150										
105 F	95	97	100	102	105	109	113	118	123	129	135	142	149								
100 F	91	93	95	97	99	101	104	107	110	115	120	126	132	138	144						
95 F	87	88	90	91	93	94	96	98	101	104	107	110	114	119	124	130	136				
90 F	83	84	85	86	87	88	90	91	93	95	96	98	100	102	106	109	113	117	122		
85 F	78	79	80	81	82	83	84	85	86	87	88	89	90	91	93	95	97	99	102	105	108
80 F	73	74	75	76	77	77	78	79	79	80	81	81	82	83	85	86	86	87	88	89	91
75 F	69	69	70	71	72	72	73	73	74	74	75	75	76	76	77	77	78	78	79	79	80
70 F	64	64	65	65	66	66	67	67	68	68	69	69	70	70	70	70	71	71	71	71	72

Heat Index	Possible Heat Disorder
130°F or greater	Heat stroke highly likely with continued exposure.
105°F to 129°F	Sunstroke, heat cramps, and heat exhaustion likely, and heatstroke possible.
90°F to 104°F	Sunstroke, heat cramps and heat exhaustion possible.
80°F to 89°F	Fatigue possible with prolonged exposure and physical activity.

Source National Weather Service

Respiratory *(Continued from page 1)*

Cost per year for each employee in the program is estimated to be $360.00. This does not include cartridges or replacement parts.

The logic form has been modified to meet Tempe's specific needs. Each employee and Supervisor must fill out and sign the form. Once completed the forms will be sent to the Program Administrator for review.

The use of the form is strictly to verify that respirators worn by employees are properly selected and are actually required. It is important to remember that OSHA wants employers to engineer out respiratory hazards before using a respirator.

If you have questions concerning the form or the respiratory program, contact Scott Mosley.

Heat Stress *(Continued from page 2)*

When heat gain exceeds the level the body can remove, the temperature of the body's inner core begins to rise and heat related illnesses may develop.

As a result, the "Heat Index" (HI) has been developed. The HI is the temperature the body feels when heat and humidity are combined. The table on page two correlates the actual temperature and relative humidity, producing a HI. (This chart is based upon shady, light wind conditions. Exposure to full sunshine can increase the HI by up to 15°F.)

When you are working in a high-heat environment and begin to feel thirsty, it is an indication that you are already partially dehydrated. You must drink water before you become thirsty.

Remember that heat related illness can be fatal. Here are some general recommendations from OSHA.

- Consider Physical condition. Obesity, lack of conditioning, pregnancy can increase susceptibility to heat stress.
- Avoid large meals
- Adjust workloads or work schedules so heavy work is performed when it is cooler out.
- Allow frequent short rest periods in a cooler area.
- Wear lightweight, light colored, loose fitting clothing.
- Use good ventilation/air flow to aid in evaporation cooling.
- Monitor urine output. Large volumes of relatively clear liquid indicate proper hydration, while small volumes and dark urine indicate possible dehydration.

Remember, heat related illness can occur quickly even if all preventive measures have been taken. For more information on heat related disorders contact Scott Mosley.

Fatal Fact U.S. Department of Labor Occupational Safety and Health Administration

Brief Description of Accident

Employees were laying sewer pipe in a trench 15 feet deep. The sides of the trench, 4 feet wide at the bottom and 15 feet wide at the top, were not shored or protected to prevent a cave-in. Soil in the lower portion of the trench was mostly sand and gravel and the upper portion was clay and loam. The trench was not protected from vibration caused by heavy vehicle traffic on the road nearby. To leave the trench, employees had to exit by climbing over the backfill. As they attempted to leave the trench, there was a small cave-in covering one employee to his ankles. When the other employee went to his co-worker's aid another cave-in occurred covering him to his waist. The first employee died of a rupture of the right ventricle of his heart at the scene of the cave-in. The other employee suffered a hip injury.

Accident Summary

Accident Type	Cave-in
Weather	Cloudy/ Dry
Type of Operation	Trenching/ excavation
Crew Size	4
Collective Bargaining	No
Competent Safety Monitor on Site?	Yes
Safety and Health Program in Effect?	Yes
Was the Worksite Inspected Regularly?	Yes
Training and Education Provided?	No
Employee Job Title	Pipe Layer
Age/Sex	32/M
Experience at this Type of Work	9 months
Time on Project	2 weeks

Inspection Results

Following the investigation, citations were issued alleging three willful, four serious and two non-serious violations of the construction standards. Had the trench been shored to prevent slides or cave-ins and had employees been trained to recognize and avoid unsafe conditions, the accident could have been prevented.

MSA GAS DETECTORS

MSA gas detectors are one of the best pieces of air monitoring equipment on the market today. These meters are easy to use, reliable, rugged, and have an outstanding warranty.

It is important to remember that before employees use any gas detection equipment they are properly trained and understand the abilities and limitations of each meter.

It is extremely important that we remember when using a gas detector it is because there is the potential of a hazardous atmosphere, which could cause serious injury or death. If used by someone without MSA basic training or if steps are by-passed by someone who is trained, the meter only provides a false sense of security and is useless.

MSA gas detectors must be warmed-up at least 10 minutes before being bump tested. Bump testing must be performed before the start of each day. A bump test is the only way to ensure the sensors are seeing gas.

The Environmental Division has several meters available for use by trained individuals. If you use a meter from the Environmental Division, please make sure the meter is signed out. If you need a meter for an extended time frame, please check with David Tavares or Raymond Hagen to ensure the meter is not needed and to arrange for a portable bump station.

If you would like training or refresher training on the MSA meters used by WUD contact David Tavares or Raymond Hagen to schedule a class through Risk Management.

What 's New

Looking Out for Others

How do *you* nominate a co-worker for a City Safety Award? Contact your City Safety Team Representative for a form or click here.

- Last week Mike Bershad stopped a contractor who was spraying a highly flammable substance inside a confined space without air monitoring devices or respiratory protection. Mike measured the air inside the space some time later and the LEL was above 70%. Risk Management followed up to ensure the contractor properly protects their employees. However, it is clear that Mike's actions may have averted a serious if not fatal injury from occurring. *Good job Mike!*

Congratulations South Water Treatment

On July 17, 2002, the South Water Treatment Plant received the City Safety Award for their team approach to safety. Their commitment to team safety and training is an example to us all.

Mike Bershad receives the award on behalf of the plant from David Tavares

Risk Management

Diane Kundrat

350-8245

Laura Guerrero

350-2916

Cora Lofgren

350-8321

Scott Mosley

350-8877

Environmental

Sherman McCutcheon

350-2678

Raymond Hagen

250-5334

David Tavares

858-2223

This newsletter is intended to be a supplement to "in-house" safety training. For questions or comments concerning this publication, or suggestions for articles, contact Raymond Hagen or David Tavares